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Procedia Manufacturing 3 (2015) 5755 – 5760

**Procedia**  
MANUFACTURING

6th International Conference on Applied Human Factors and Ergonomics (AHFE 2015) and the  
Affiliated Conferences, AHFE 2015

## Ergonomic issues related to clothing and body changes of the new elderly women

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### Abstract

This article presents the changes that occur with the body of the new elderly women and their relationship with clothing. It aims to investigate if these women can find on the market the right clothes for their needs and if ergonomic issues such as comfort, usability, safety and welfare are being considered. This study investigated women between 61-68 years of age through focus groups in order to obtain their impressions of the new elderly women through images of various models presented, encouraging discussions about the clothes, whether they were or not appropriate for the age of the users, what were their thoughts about the clothes and if they would use them. The results showed that the models found in the market are not meeting their changing needs, some clothes do not favor the current conformation of their body, such as sleeveless blouses, too tight or too short dresses, pants with very low waist, excessive fabric near the abdomen, shapes that generate discomfort, or fabrics and prints said "unfit" for their age.

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Peer-review under responsibility of AHFE Conference

**Keywords:** elderly; clothing; modeling; body; fashion; design; ergonomics.

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## 1. Introduction

The world's population has been progressively aging, not only in developed countries but also in developing countries. The advent of new technologies and research and the discovery of new drugs coming on the market, add up to a gradual and significant decrease of birth rates in the world.

The elderly in society are seen, in general, as a group who is not part of any social, economic or affective processes. However, despite the inherent age changes related to the body, cognition and sociability, the elderly today want to improve their quality of life, both physically, through exercises, as well as cognitively, by attending schools, courses and universities.

In Brazil, the growth of the senior population is also significant. Currently, there are about 19 million seniors, representing at least 10% of the population. [1] With this increase of the elderly population, it is important to note the emergence of a new elderly woman. More women are active with increased participation in the social and professional functions.

Socially and professionally active, the new elderly woman is located in the age range of sixty to seventy-five years old. Women, who despite the changes that the body presents, such as loss of height, reduction of certain body dimensions, weight gain, among others, lead us to think that we cannot use the same measurement standards for the adult population to manufacture their clothing.

“These ‘beautiful seniors’ invented a special place in the world and constantly reinvent themselves. They continue singing, dancing, creating, loving, playing, working, transgressing taboos, etc. They do not retire, but refuse the rules that would oblige them to behave like old people. They do not become invisible, deleted, unhappy, sick, depressed. They [...] are rejecting stereotypes and creating new possibilities for aging.” [2].

As for the changes in the body of the senior woman, we can emphasize, according to Dreyfuss [3] an average loss of 6% of the height, decreased muscle mass, which leads to other changes, such as decreased bone density and increased fat, which could increase the weight up to two pounds every ten years. Changes of the abdomen, sagging and localized fat are other inevitable changes.

Iida [4], however, reminds us that not all symptoms of senility apply to all elderly. Individuals aged 60 years or more, often have as much strength and disposition as 20-30 year olds. Steady activities preserve the physical, motor and mental capacities of people. Despite the losses, the elderly are not unable to work and live well, especially those who have prepared themselves throughout their lives, exercising physically and / or intellectually.

The objective of this paper is to present the changes that occur with the body of elderly women and the difficulties of the new elderly in relation to clothing.

## 2. Body Transformations of the Elderly Woman

Aging is a natural process that reflects a phase of human life when physical, cognitive and social changes begin. The elderly realize that despite many gains accumulated in life, the losses begin to emerge, especially in relation to health. To Iida [4] the aging process causes an erosion of cardiovascular functions, muscle strength, joint flexibility, the sensory and brain functions. It starts around 30 to 40 years of age and accelerates after the 50's. According to Santos and Sala [5] this process also begins at age 30, when the skeleton is fully formed; from there it begins to lose bone and muscle mass; it also suffers decreased metabolism, losing 10% of physical capacity for each year of life.

Postural changes start about 40 years of age according to Silveira et.al. [6] and are characterized by increased curvature of the back (kyphosis) and reducing lumbar lordosis. The height of the individual begins to decrease, and difficulties of reach and flexibility, especially of the arms, are noticed. Authors believe that changes in posture are not always due to a defect or anomaly, they can also be offsetting changes that result from other neuromusculoskeletal mutations in the spine. Many changes are the result of natural wear or poor postural habits. Silveira et.al. [6] points out that the loss of muscle mass leads to muscle weakness and is the main cause for the deterioration of the functional capabilities in the aging process, which leads to mobility loss.

Also at the age of 40 memory decreases, vision problems tend to arise between 40 and 50 years, such as presbyopia. At 60 years of age, the brain of the elderly no longer has the same speed. Hearing, touch, smell and taste will also suffer losses. The woman's body is constantly changing, from childhood to adolescence, adolescence to adulthood and finally old age, where we find the new senior women, around 60-75 years of age. All body

transformation processes are also directly linked to the quality of life of these women, independent of the natural aging process, such as health care throughout life, physical and intellectual development, eating habits and social-economic conditions.

Bryson [7] says that age-related changes in the musculoskeletal system interferes with daily activities of the elderly, leading to the decrease of task performance even in the most active individuals. With aging, muscle loss and the reduction of sweat glands, thermal sensitivity decreases causing the elderly to feel cooler. "For the elderly, body dissatisfaction is more associated with functional parts of the body rather the aspects of appearance and body weight, thus physical activity is aimed more at the preservation of bodily functions" [8]

### 3. Clothing Design

Clothing should follow technical and aesthetic requirements, without disregarding technological innovations and mainly focus on the user, considering their needs, abilities and limitations in their mobility, age and activity performance.[9] In the past children dressed as adults, serious and skimpy clothes, no freedom to exercise their childish desires. As for the clothing for the elderly found in the market today, they are manufactured in accordance with standards for young people, despite the elderly no longer having the same mobility, agility and body shape of the young. The difficulty of this group in finding appropriate clothes, in regards to size and new body shape, leads to consumer dissatisfaction. Clothing designs are not always appropriate to the needs of users. The ergonomic issues of comfort, usability, safety and well-being are not being considered.

According to Bryson [7] body changes may cause the elderly women to have difficulty in choosing appropriate clothing, as the new limitations can make it more difficult for them to dress themselves. As the skin becomes thinner with age it is important for fashion designers to consider appropriate fabric, which are not harsh. Also, the finish of the trims, such as zippers or fasteners may cause irritation of the skin, with the risk of scratching or hurting the elderly. To do so, designers may use more modern clothing design, such as hi-tech "smart" fabrics or seamless clothes, in order to bring more comfort to the elderly and even for other populations. Haffenden and Smith [9] suggest clothes made with spandex for its ability to stretch up to three times its size and rapid return to the body fit. This feature facilitates dressing and undressing movements.

The problems associated with the spine affect the elderly from the moment some visual distortion occurs in the body, since clothes will not have the same fit they used to, which can bring physical discomfort and dissatisfaction with their own image. Other changes in the body such as osteoporosis lead to loss in height, shoulders shrinkage, lack of waist line and larger abdominal area, which turn garments into an inconvenience, regarding fit of clothing as well as the aesthetic proposed by the designer. Features like these probably are not considered in the design of clothing for the elderly.

The tasks of dressing or undressing clothes, such as buttoning and unbuttoning or using other fasteners become more difficult due to the loss of touch. "Proper fit of clothing was a significant problem for females. Hands and wrist problems were significantly related to difficulty in manipulating fasteners. Difficult clothing design features included turtlenecks, long and set-in sleeves, and back closures for women and pullover sweaters, t-shirts, ..." [7]

Research findings by Richard and Guzelapud Bryson [7] show that older people expressed the need for specific styles, with more comfortable clothes, suggesting the use of elastic and pockets on shirts and pants in daily clothes. Regarding ergonomic issues, clothes could be developed to facilitate movement. Today, despite the quest for comfort, it is believed that the new elderly also seek to be in fashion even though they often need to wear clothes that help hide some problems in relation to the body caused by disease or by the transformation of the body, such as weight gain, sagging arms and neck, and dry skin. It is for fashion designers to study on the changes that the body goes through with aging in order to develop age appropriate clothing designs. This will provide the aesthetic model that will bring comfort and well-being to the users.

Studies by several researchers presented by Haffenden and Smith [10] has shown that there is a discontentment with the aesthetics in relation to clothing. From this research some problems like short and sleeveless clothes were detected, also too high round-neck tops or too low scoop-neck tops, synthetic fiber, fabrics that irritate the skin, types of fastening that cause discomfort such as zippers, for those who have arthritis problems, fashionable colors not available in preferred sizes and styles, and also functionality and appearance. With the results from the research, we realized the need for a study with the new elderly woman, 60-75 years of age, to see if the clothes found on the

market meet the expectations of their generation.

#### 4. Method

In order to seek the opinion of the new elderly women on the clothing they purchase, we led some focus groups sessions, which according to Santos [11] is a group of people gathered to discuss a particular subject, and may involve the experiences of the participants in relation to a product, requirements for a new product or usability problems associated with the use of the product.

Therefore, several images of clothes related to the problems encountered in the research by Haffenden and Smith [9] were selected and exposed to two focus groups in order to obtain the views from the senior users. The images gathered many samples to encourage discussions about the clothes, whether they were appropriate for the age of the users, such as tights, loose clothing, sleeveless blouses and so on (figures 1-3). The main issue was what they thought about the clothes and whether they would wear them. The groups were formed by six ladies aging 61-68 years living in the South Zone of the city of Rio de Janeiro.

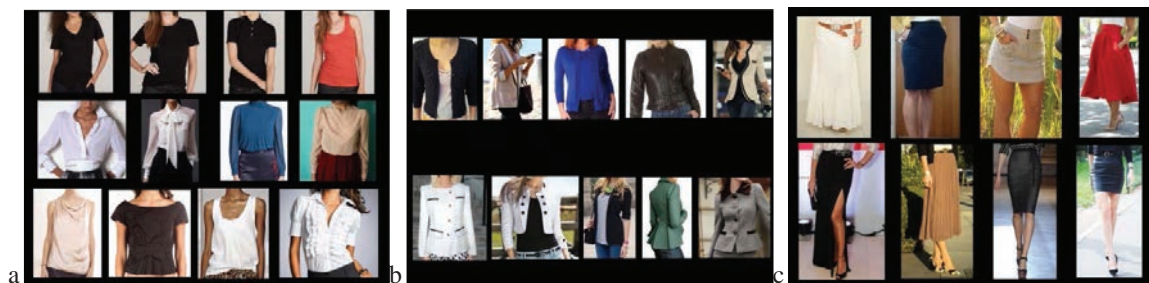


Fig. 1. (a) t-shirts, blouses and shirts; (b) blazers and jackets; (c) skirts.



Fig. 2. (a) dresses; (b) pants; (c) shorts.



Fig. 3. (a) bikinis and swimsuits; (b) prints.

## 5. Results

From the interviews it was possible to identify some issues in respect of clothing with their new body. Some clothes do not favor the current body conformation of the interviewees, such as sleeveless blouses, too tight or too short dresses, pants with very low waist, excessive fabric near the abdomen, styles that generate discomfort, fabrics and prints said "improper" for their age. Although they were presented only in pictures, most of the interviewees stressed the importance of the fabric touch on the skin, selecting fabrics from natural fibers such as cotton, linen and cotton fabrics. They commented that they are now valuing also synthetic fabrics for their soft touch and practicality of maintenance (washing and ironing). For the overweight senior ladies using larger sizes, the difficulty in finding clothes is great and they often buy in cities with more choices or even abroad. Regarding the trousers it was highlighted by a group interviewed that they only purchase them when traveling abroad.

In the first image with t-shirts, blouses and shirts, with the variety of images displayed, there was much debate on short sleeves. Most of the women no longer use sleeveless blouses, for the sagging of their arms, or knitted sweaters for they get too tight to the body. The next image with coats and blazers, from a variety of styles, the majority chose the traditional blazer and the twin-set. Then images of skirts were also discussed, but only one lady uses short skirts and most of them do not wear skirts with a lot of volume, for they give the appearance of overweight. The dresses chosen by them were with sleeves and length below the knee, due to dissatisfaction with their own legs, they do not consider them pretty to be exposed. From a diversity of pants, most prefer straight pants, higherwaist and leggings, while pants with low waist show the volume of the stomach. Regarding images with shorts and bermudas, only one said she still wears shorts, the rest only wear longer shorts or bermudas. As for the beach clothes, most prefer to use swimsuits and the ones that still wear bikini are already thinking of wearing swimsuits, for reasons similar to the pants with low waist to disguise the tummy. The last pictures with various types of prints, the choice for ball prints was unanimous; vertical stripes and prints of flowers were also mentioned as a preference. Animal prints like jaguars and zebras would only be used as a detail and not as a whole piece.

## 6. Conclusion

"It is important that older people are not seen only from the perspective of chronology, they should be seen from several different angles, especially the social aspect. Modern society requires production, agility and interaction with new technologies." [12].

As seen from the focal group, we concluded that certain types of clothes widely available on the market are no longer suited to the demands of the senior woman. There is a difficulty in finding clothes in stores with suitable designs; for lack of sizes, the fitting of the clothes, or for not finding the preferred style. Overweight women only find modern clothes in other cities and abroad. Some do not buy trousers in Brazil due to the difficulty in finding a design with higher waist.

With increasing elderly population and thanks to healthy and productive aging, these new seniors represent a new market niche for clothing products. It is evident that most clothing do not meet this demand. The clothes are designed for younger women, both on the issue of style as well as design.



It is noticed that elderly people do not feel their age, but the relationship of clothing with their new body, is clearly evidenced by the lack of supply in the market. Age groups need well defined parameters; physical, social and cultural requirements cannot be seen as a whole, especially for the elderly who today cover a wide range that can go from 60 to 95 years of age.

Aging should be seen as a positive aspect, an opportunity; clothing industries should have a positive look at this new consumer. The wear ability and comfort of the clothes should be thought out by fashion designers not only for the young people but also for the senior population who experience changes with their new body.

## Acknowledgements

PUC-Rio and CAPES, for the encouragement and support of this academic research.

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